SPURS Prawler mooring report
Miami, Jan 2013

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NOAA / PMEL

Overall situation

- Goal (funding): test/prove instrument concept for tropical arrays, ...
- 2 Prawlers deployed from Knorr on 15 and 18 Sep 2012 (and ...)

  ~20km NNE and ESE of anchor mooring (watch circles ~6.5km)
- Profiling on average 7.6 times/day to ~475m

  (instrument goes up and down ~20 times/day)
- P1000 (North) working well (900+ CTD profiles)
- P3000 (East) had hiccups throughout, failed 16 Dec (677 CTD profiles)

  (met still working: hourly data)

  We suspect leaking .... and will propose to replace the Prawler
- Happier status at PIRATA 20°N,38°W mooring enhancements (finally!)

PICO Mooring Diagram

Standard:

-Vaisala WTX-520 (ATRH, Wind,BP, Rain)

-Inductive link

-Iridium coms

Optional:

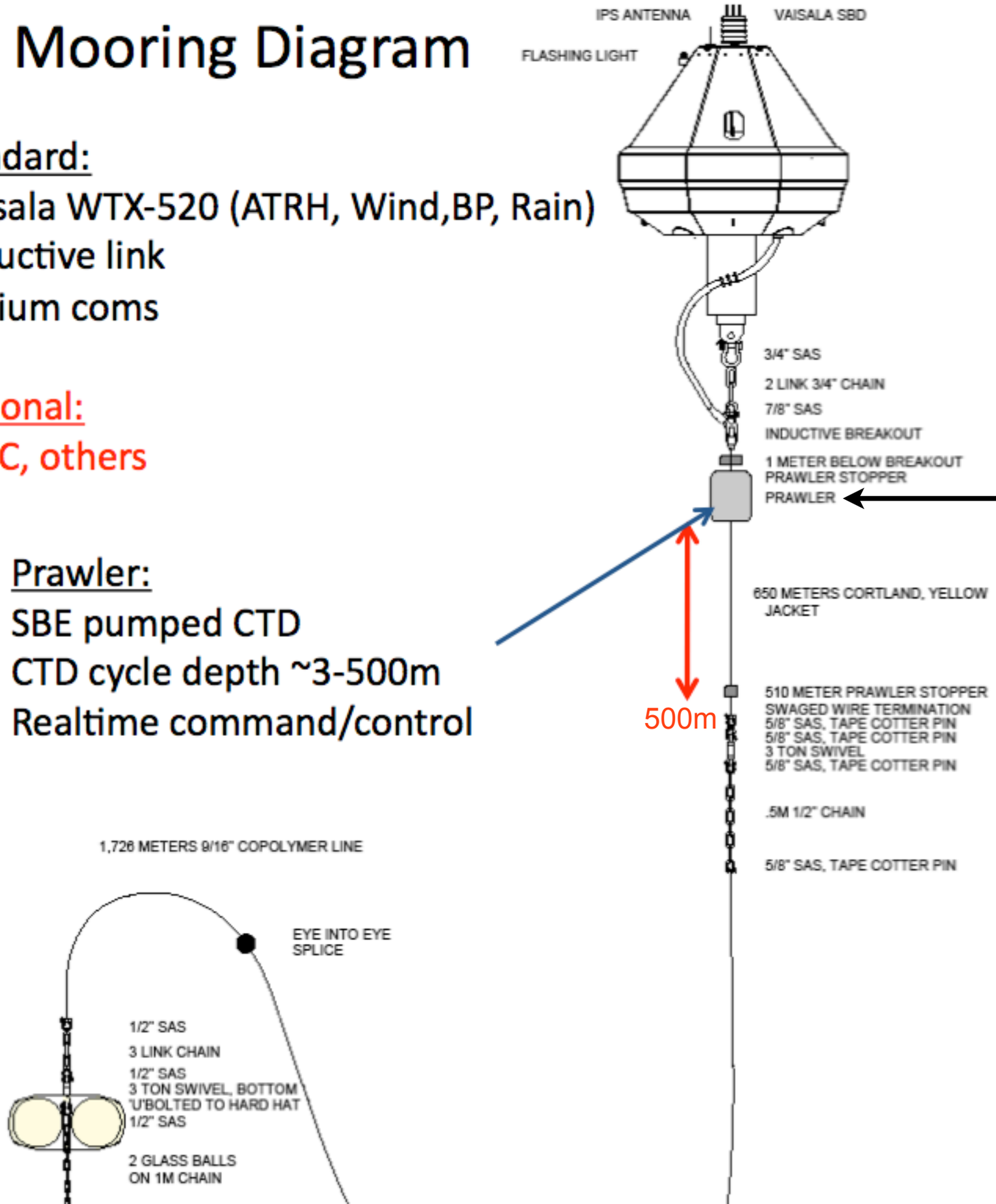
-SSTC, others

Prawler:

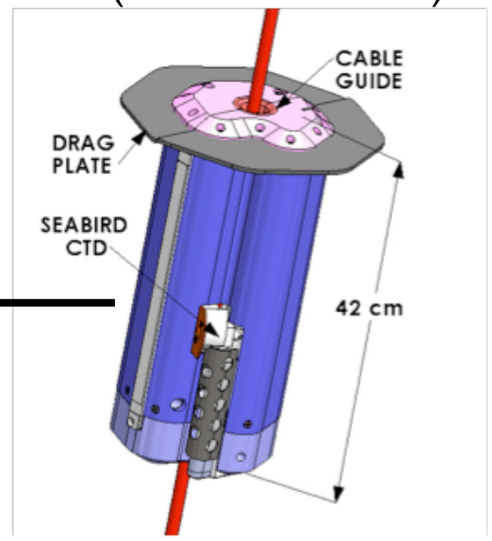
SBE pumped CTD

CTD cycle depth ~3-500m

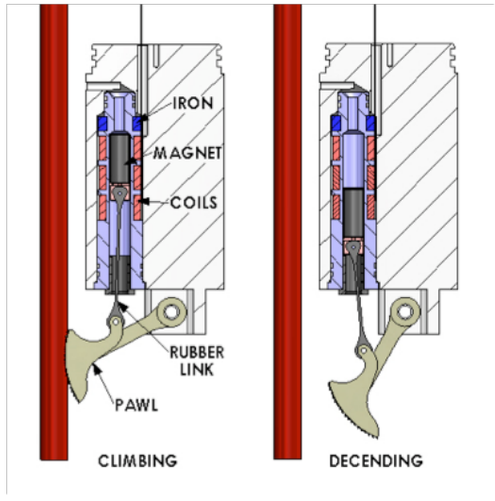
Realtime command/control



Prawler truck
(SBE-52-MP CTD)

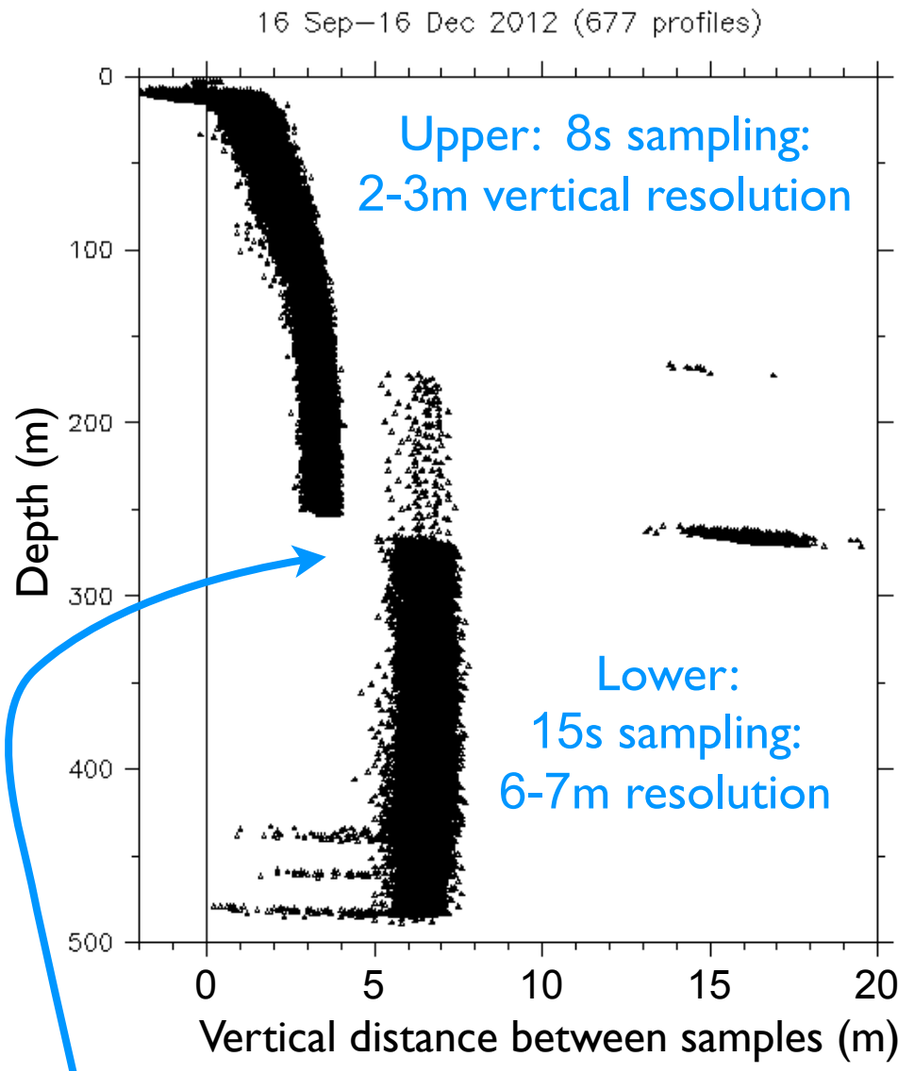


Climbing mechanism



Sampling and fall rates

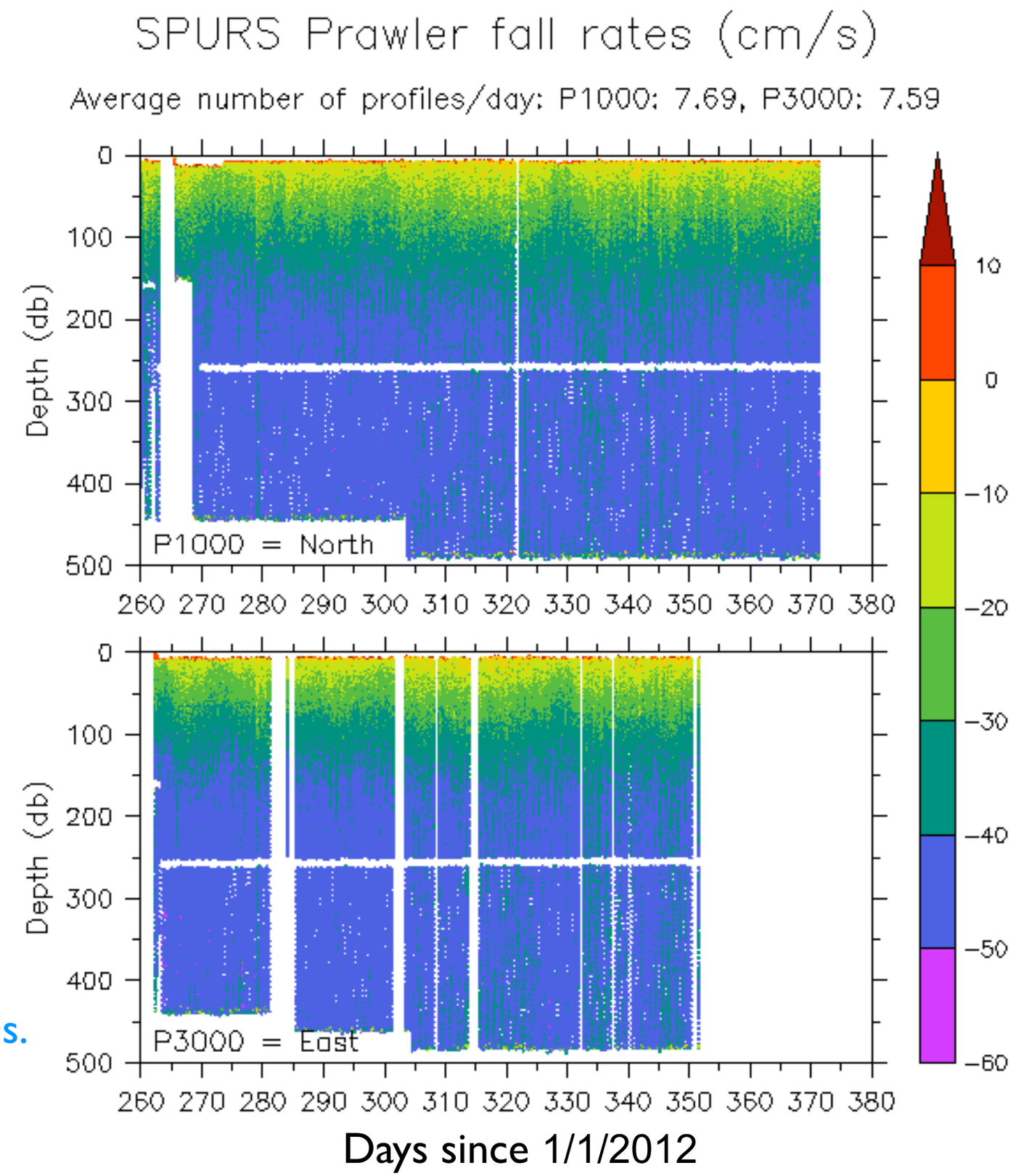
Distance between samples (P3000)



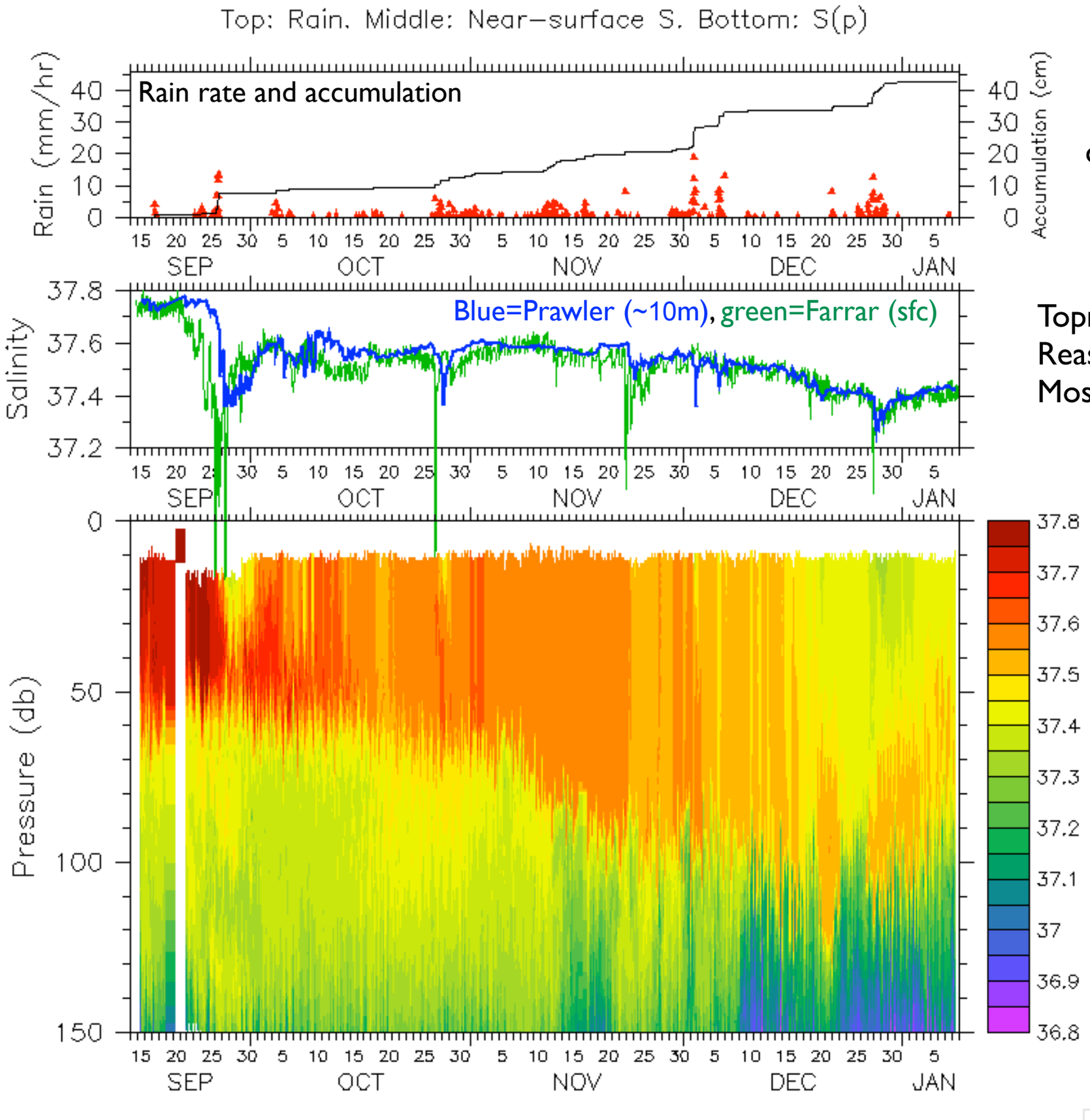
Selectable/adjustable sampling in time:

Choose top, bottom and break point depths.

Sample every 8s above break, 15s below



Rainfall and salinity at the SPURS North mooring



Lowish confidence in quantitative rainfall (sensor) ... (but 2 buoys agree)

Topmost salinity:
Reasonable correspondence? Lag???
Most rain events produce low-S spikes

Minimum depth ~10m (conservative)

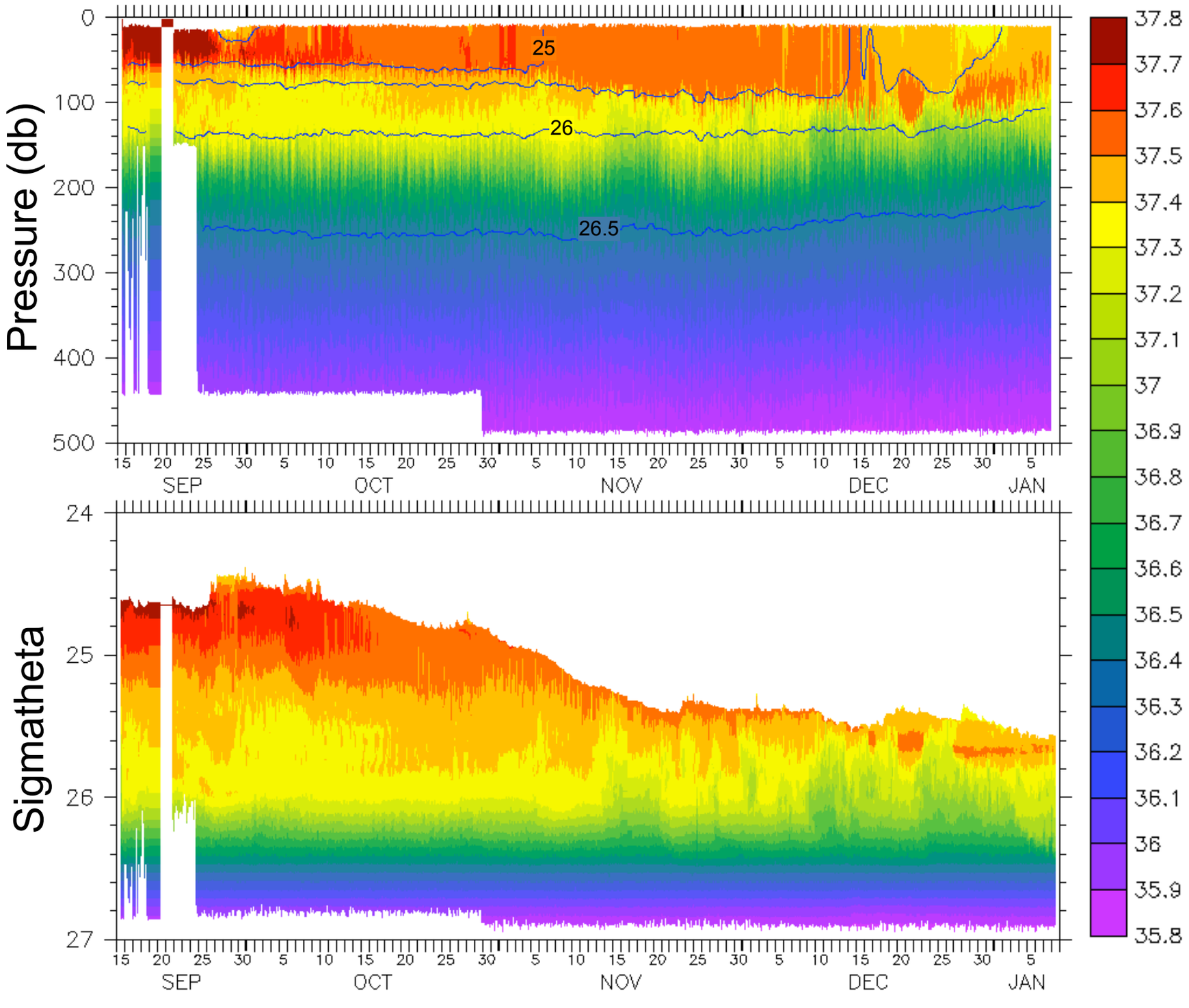
Low-S events extend to 20-40m

Very high S during cruise ended abruptly at the end of Sep.

Deeply-extending low-S events starting in mid-Dec.

Evidence of non-local processes.

Salinity at the SPURS North mooring



Overlay isopycnals (blue)

Summer extreme S disappeared by Oct.

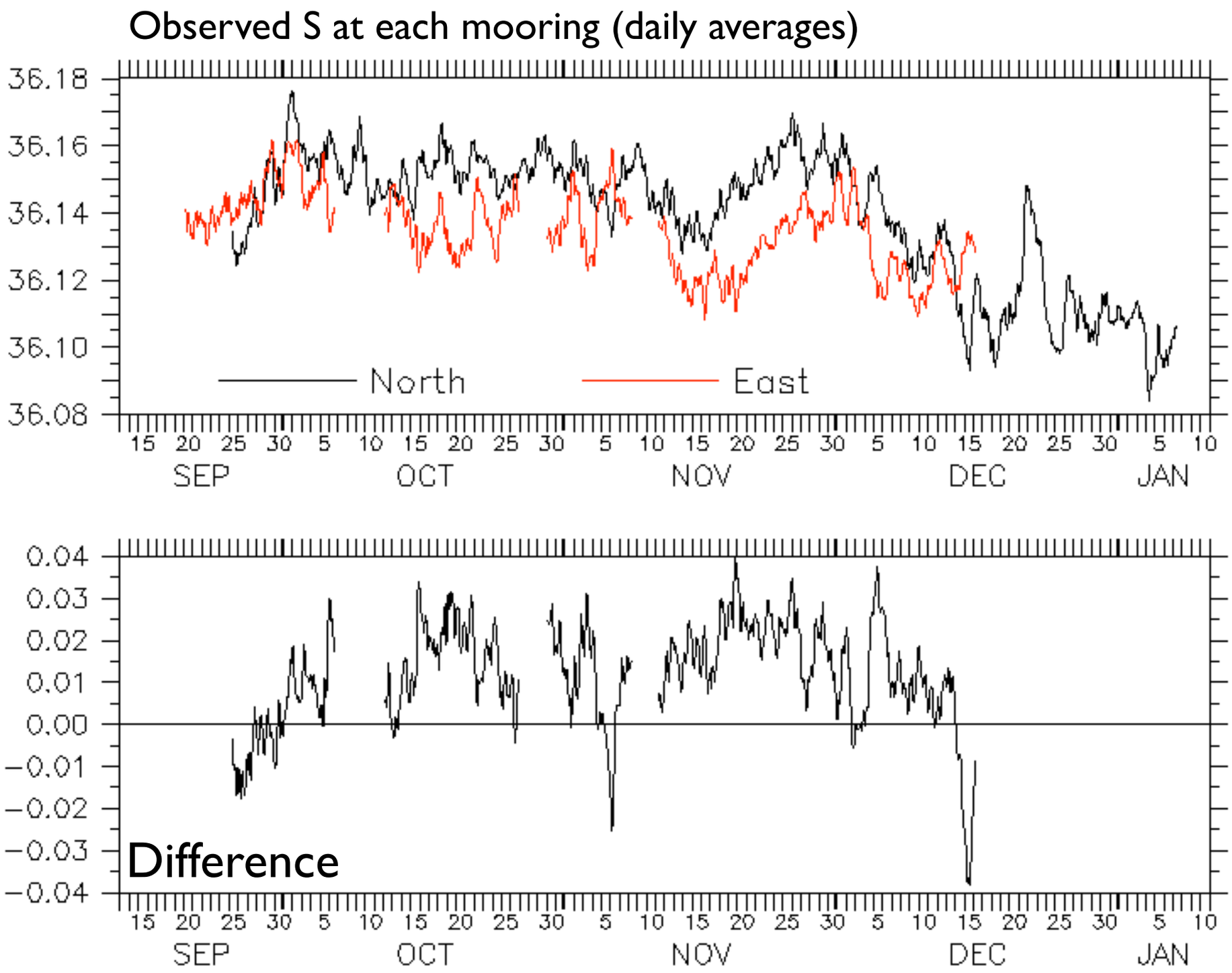
Deepening ML in Nov.

Freshening ML in Dec.

High-S layer persists near 80m (sigma 25.7)

Cold, fresh intrusions into upper pycnocline. Vertical or horiz. processes?

400db salinity difference between the two Prawler moorings



Does not appear to be drift ....
A real gradient?

Will compare shipboard CTDs

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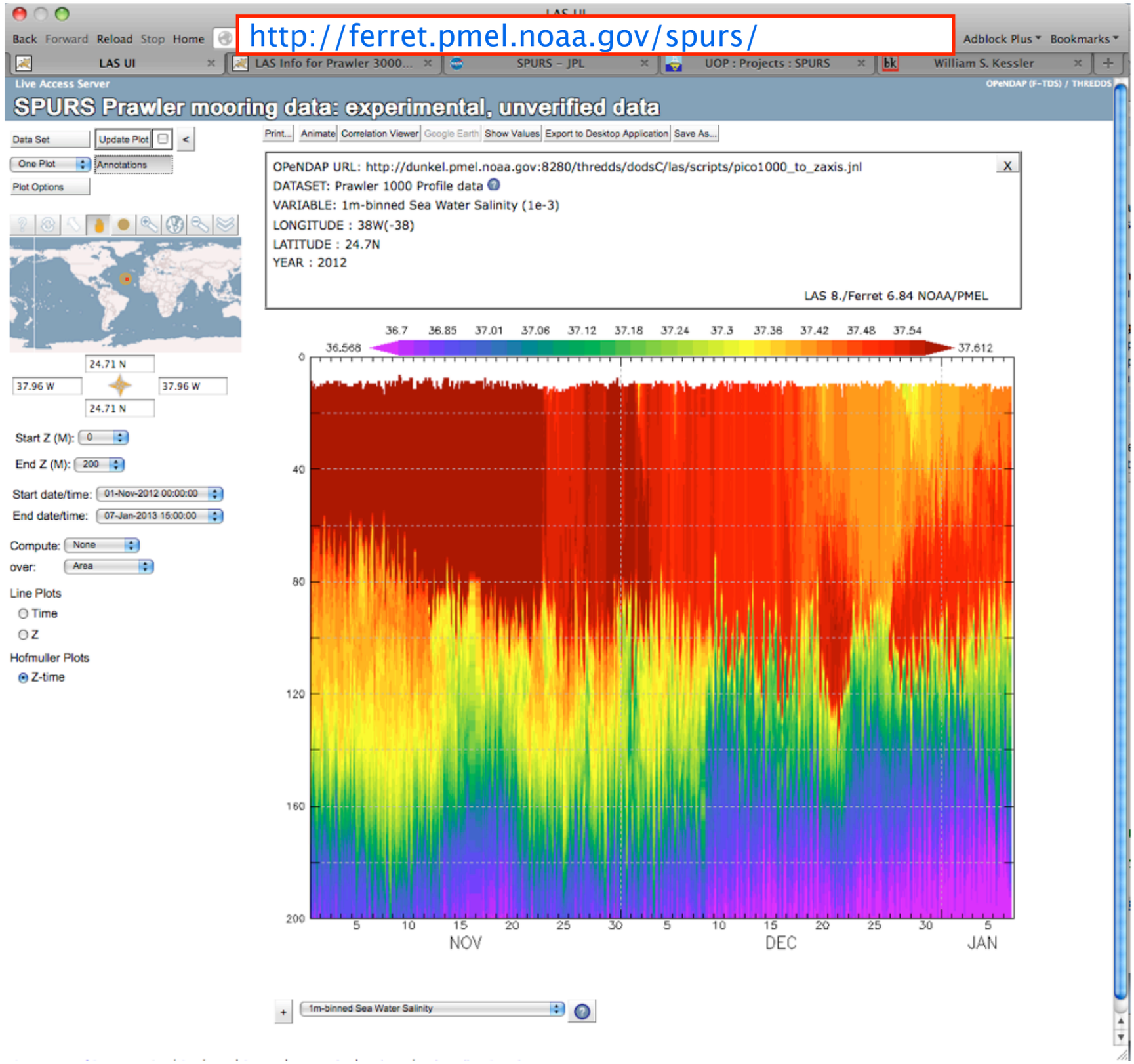
Public web page for visualization

Full data sharing within the SPURS community. (netcdf files, updated hourly)

Public: plots, no data.

Web plotting tool:

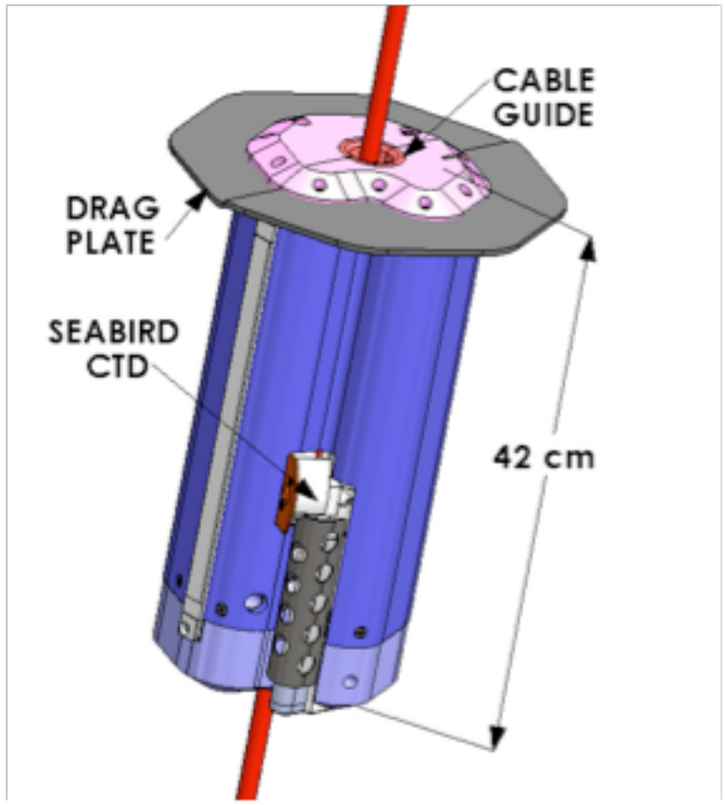
- Choose variable, time/depth range, contour levels, etc
- Property^2 plots



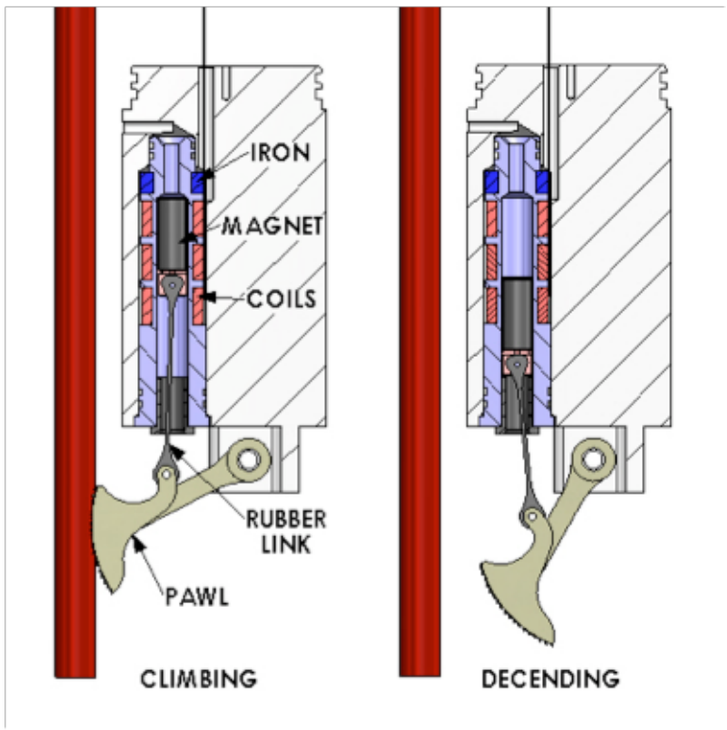
Extra figures below

Prawler mechanics

Prawler truck



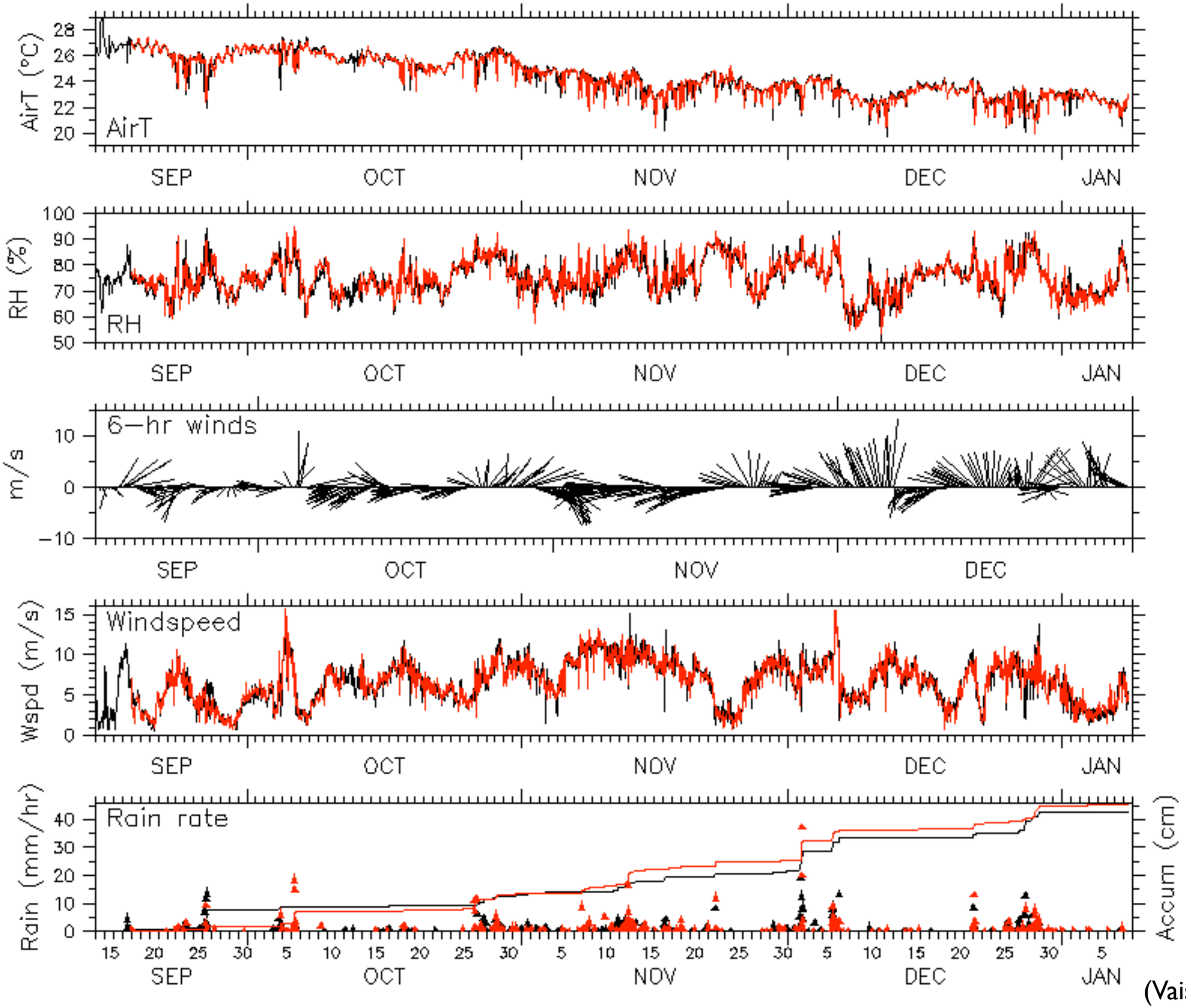
Climbing mechanism



- Best climbing efficiency from the chop (3s waves), not swell.
- Climbs and descends constantly (~hourly at SPURS site).
- Limited at the top to avoid hitting the surface buoy (2-3m minimum).
- Falls slower near the surface due to wave currents: drag on the line.
- SBE-52-MP CTD (pumped). Turned on for descent only.
- 2-way inductive modem connection (Seabird IMM).

Met obs from the SPURS Prawler moorings

Hourly values (winds are 6-hr averages). Black = North. Red = East

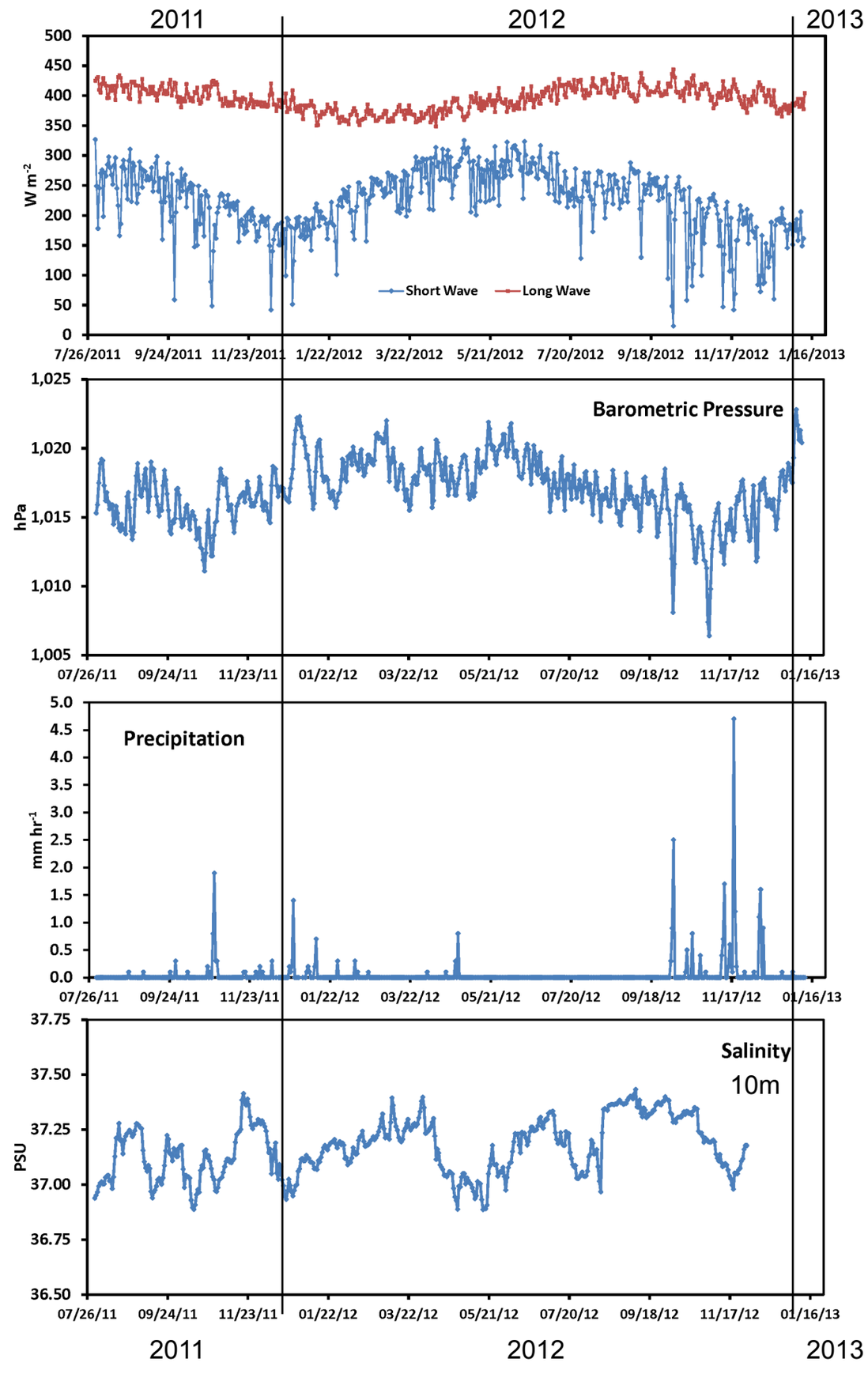


(Vaisala WXT520)

Data from the enhanced PIRATA mooring: 20°N,38°W

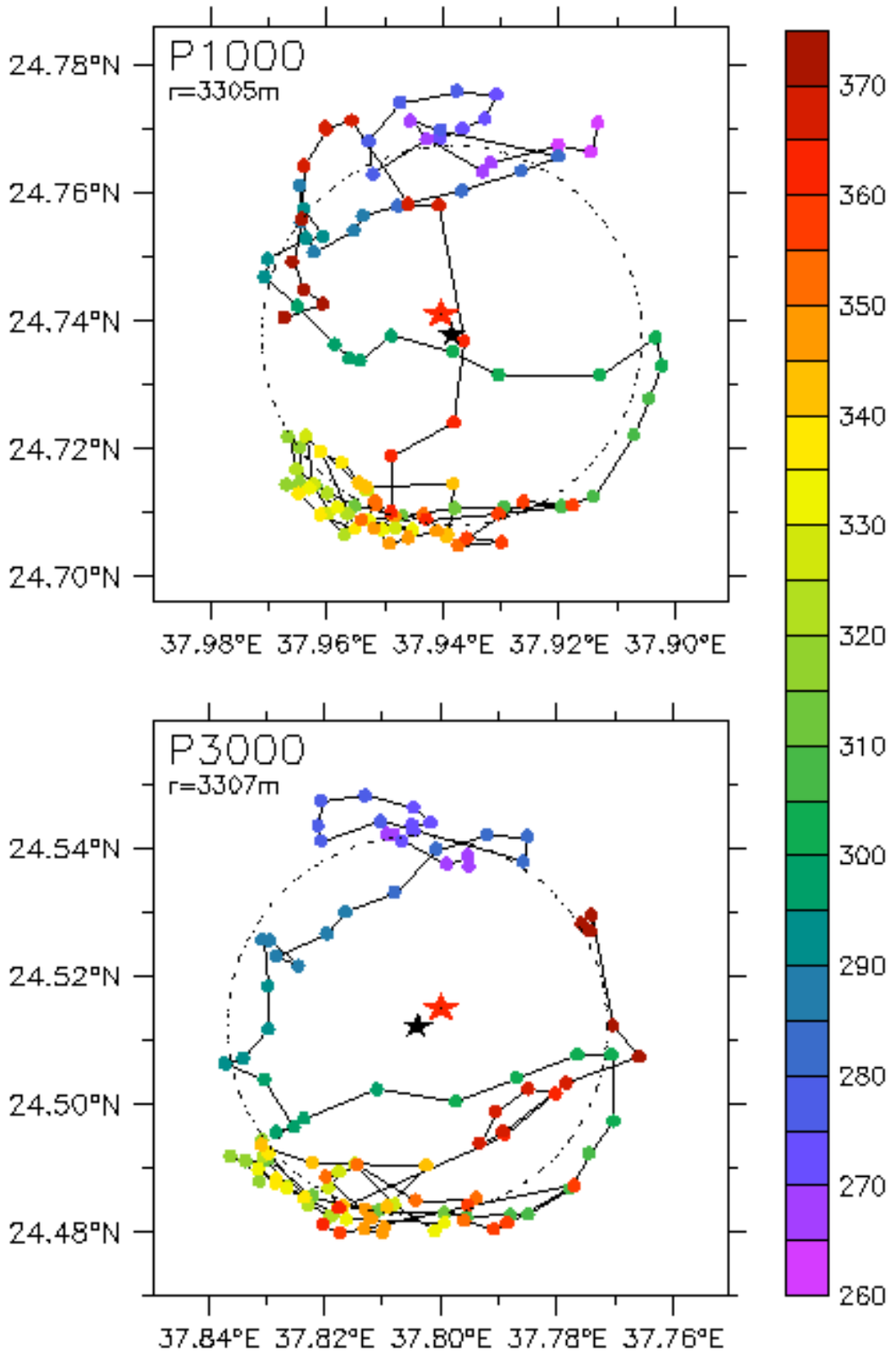
A double mooring was deployed at this site in Aug 2011: the SPURS-enhanced PIRATA mooring and a "T-flex" prototype. Both have flux enhancements and T/C cells.

Combining both moorings, we have a complete time series to the present. With the redeployment of the enhanced PIRATA funded by NASA and IFREMER, we will extend these time series for at least another year.



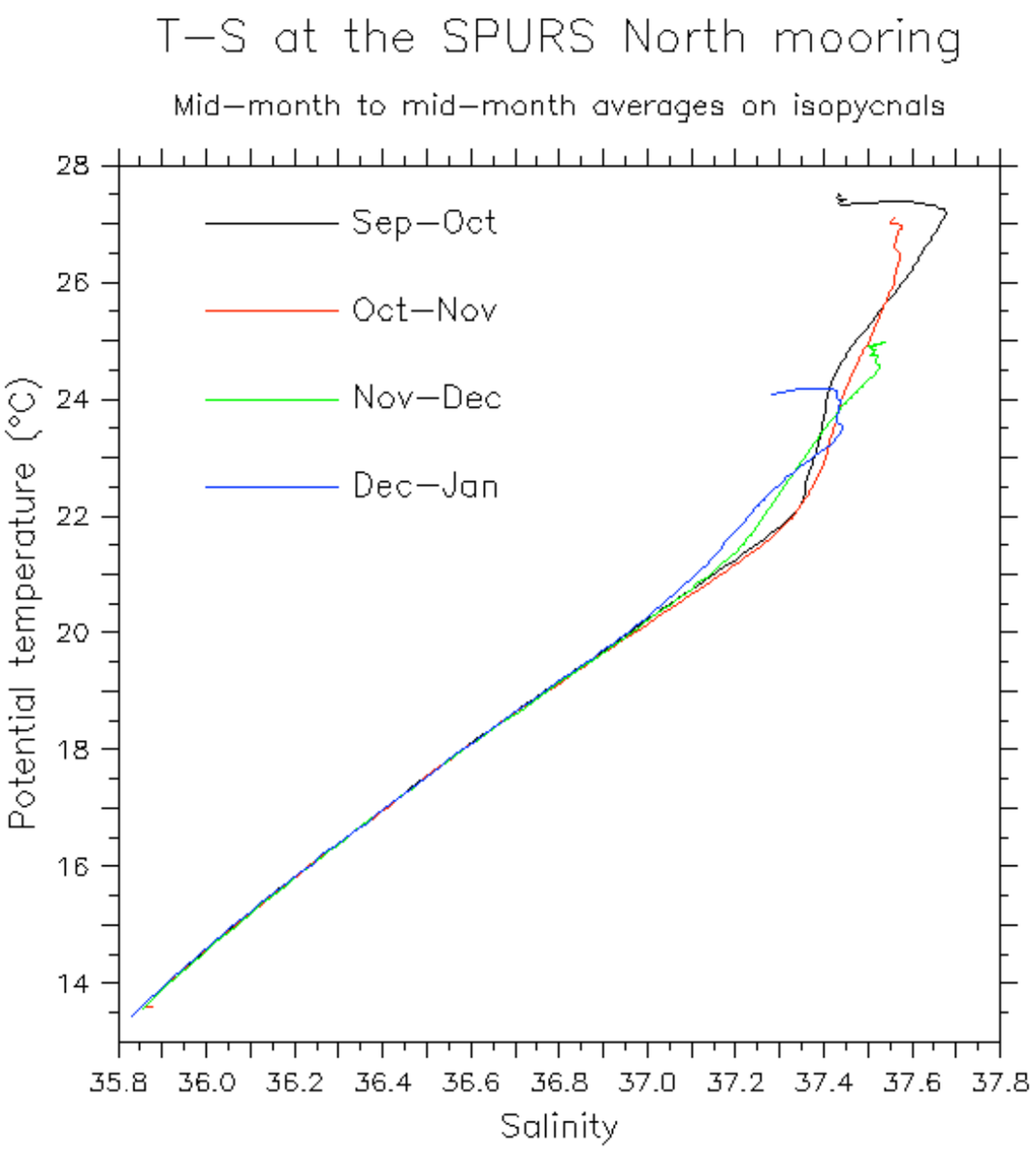
GPS positions of SPURS Prawlers

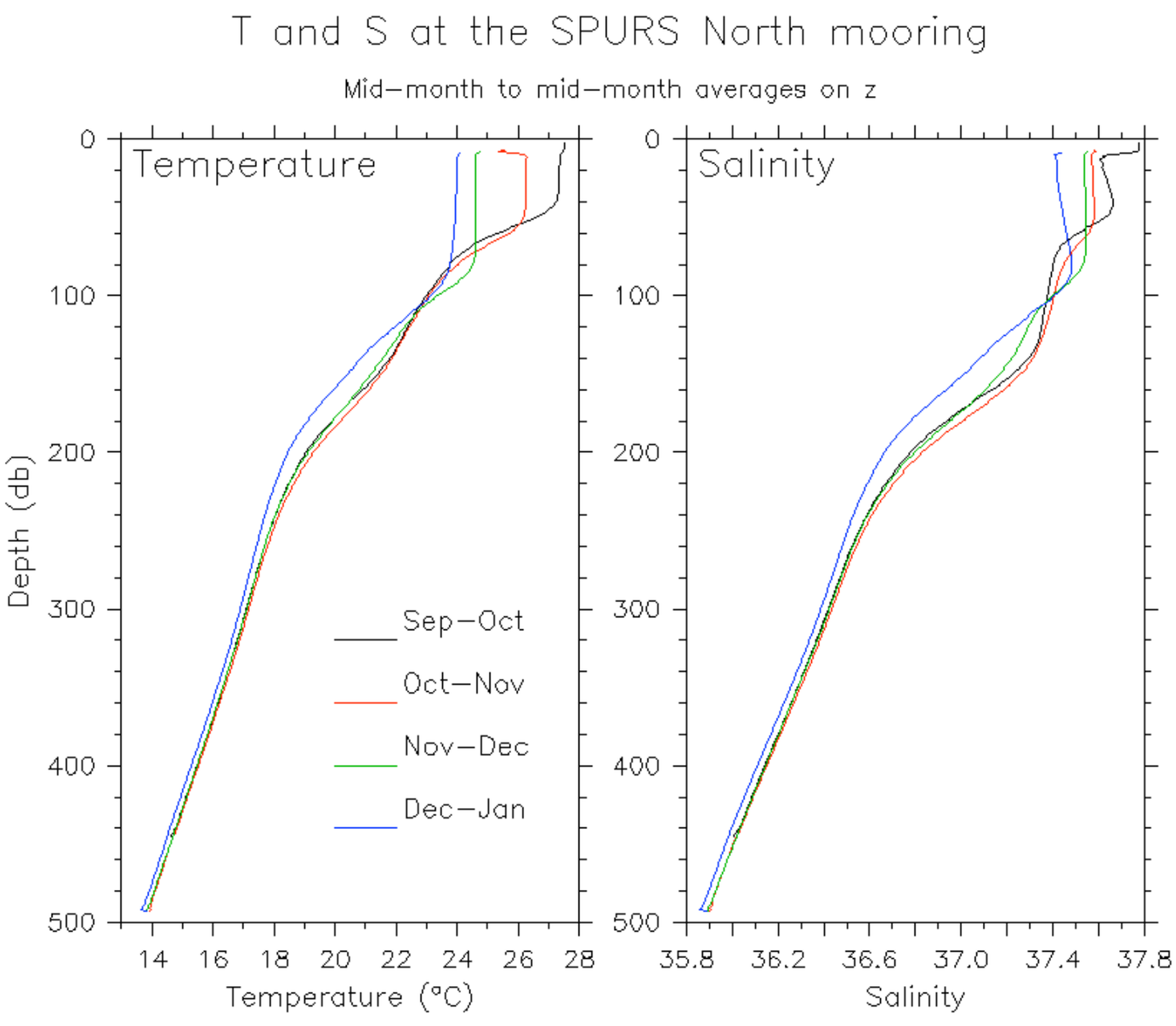
Daily positions shown, colored by yearday of 2012

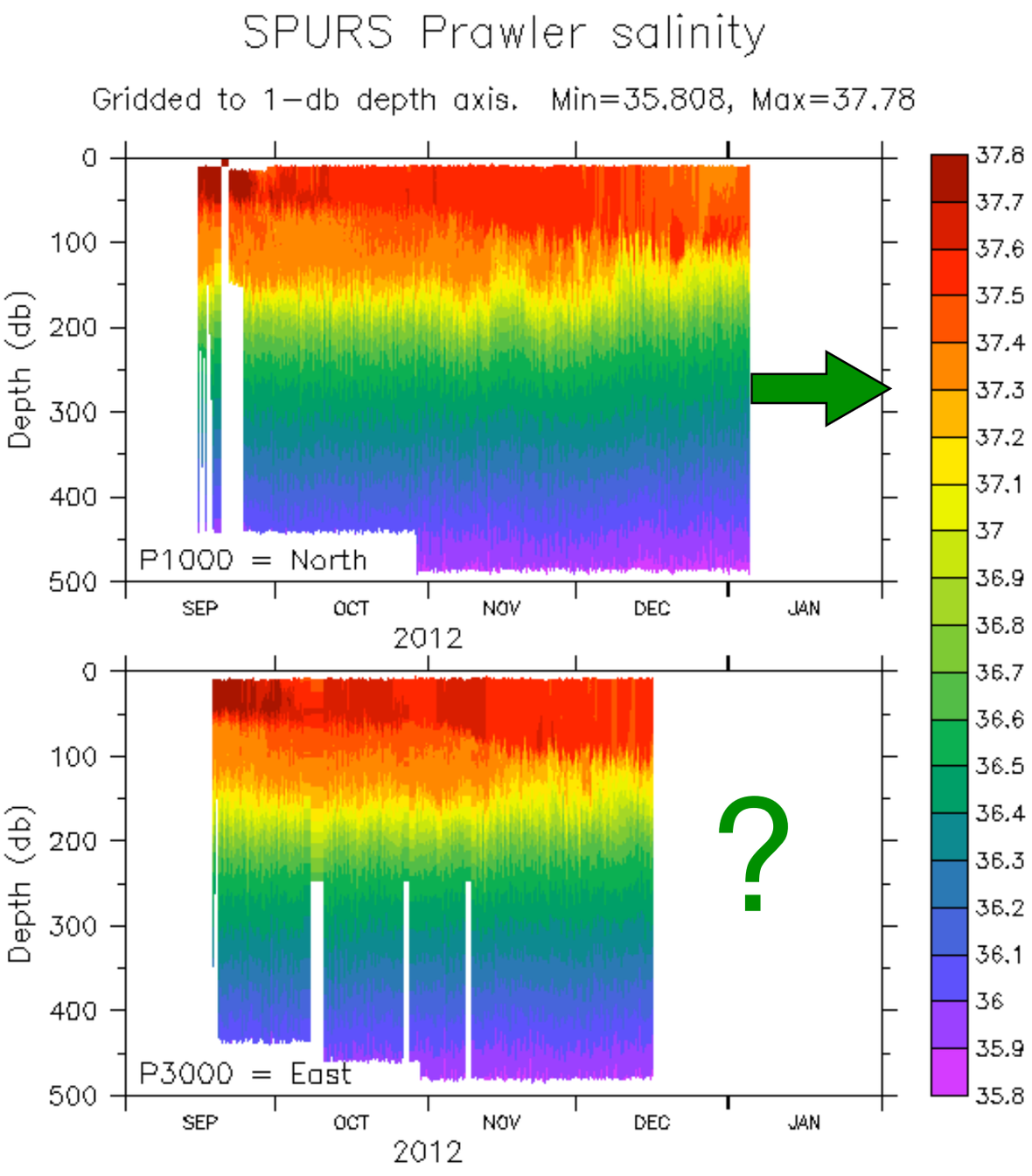


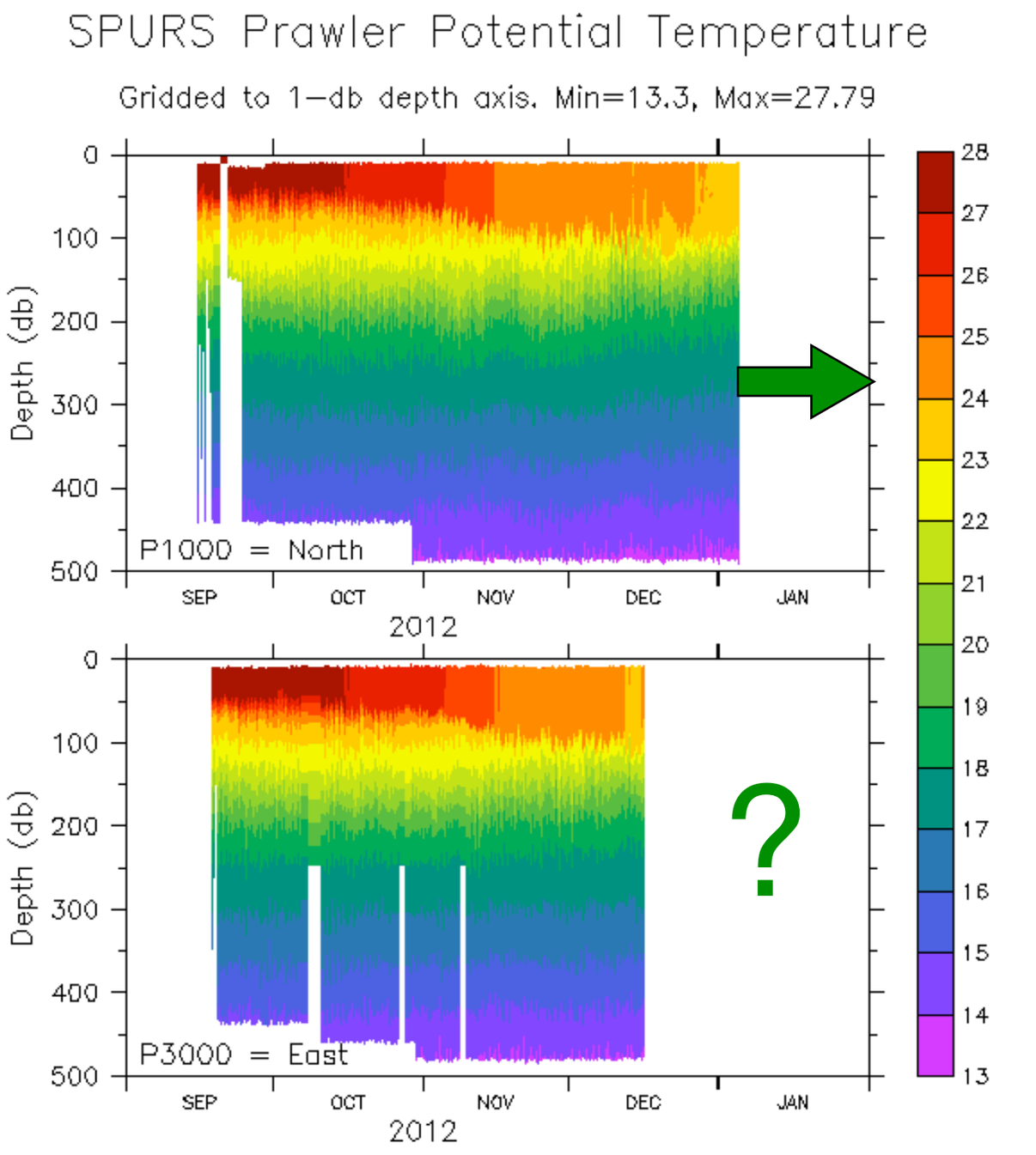
Best-fit watchcircles shown (radii listed)

Red star for estmated anchor. Black for center of fit circle.


T–S at the SPURS North mooring
Mid–month to mid–month averages on isopycnals
Sep–Oct
Oct–Nov
Nov–Dec
Dec–Jan
Potential temperature (°C)
Salinity
28
26
24
22
20
18
16
14
35.8
36.0
36.2
36.4
36.6
36.8
37.0
37.2
37.4
37.6
37.8


T and S at the SPURS North mooring
Mid–month to mid–month averages on z
Temperature
Salinity
Depth (db)
0
100
200
300
400
500
Sep–Oct
Oct–Nov
Nov–Dec
Dec–Jan
14
16
18
20
22
24
26
28
Temperature (°C)
35.8
36.2
36.6
37.0
37.4
37.8
Salinity


SPURS Prawler salinity
Gridded to 1-db depth axis. Min=35.808, Max=37.78
Depth (db)
0
100
200
300
400
500
SEP
OCT
NOV
DEC
JAN
2012
P1000 = North
P3000 = East
?
37.8
37.7
37.6
37.5
37.4
37.3
37.2
37.1
37
36.9
36.8
36.7
36.6
36.5
36.4
36.3
36.2
36.1
36
35.9
35.8


SPURS Prawler Potential Temperature
Gridded to 1-db depth axis. Min=13.3, Max=27.79
Depth (db)
0
100
200
300
400
500
SEP
OCT
NOV
DEC
JAN
2012
P1000 = North
P3000 = East
?
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13